The Office Action asserts that JP 229 discloses all of the features recited in previous claims 1 and 5. In particular, the Office Action asserts that JP 229 discloses a device for purifying the exhaust gas of an internal combustion engine comprising a particulate filter carrying a catalyst for absorbing and reducing NO_x, and a catalytic apparatus for purifying NO_x and carrying a catalyst. However, Applicants respectfully submit that JP 229 does not disclose a device for purifying the exhaust gas of an internal combustion engine as claimed in the amended claims.

A. Independent Claim 1

Independent claim 1 is directed to a device for purifying the exhaust gas of an internal combustion engine comprising: a particulate filter arranged in the exhaust system, which carries a catalyst for absorbing and reducing NO_x, said catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which catalytic apparatus carries a catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; and control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction. Such a device is not disclosed in JP 229.

JP 229 discloses a catalyst 12 and a particulate filter 14 that "absorbs NO when an exhaust gas temperature is low and discharges NO_2 when exhaust gas temperature is increased." See Abstract, lines 10-12. However, JP 229 entirely fails to disclose that the device further includes a control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction.

According to the device of JP 229, NO_x is released from the catalytic apparatus arranged upstream of the particulate filter, to oxidize trapped particulates in the particulate

filter. When the temperature of the catalytic apparatus changes, NO_x is released therefrom; however, the air-fuel ratio is not changed when the temperature of the catalytic apparatus changes or when NO_x is released. JP 229 thus does not teach a control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction.

Even if the air-fuel ratio in JP 229 were changed, the result would still not be the claimed invention, and would render the device of JP 229 inoperable. In particular, if the air-fuel ratio in the catalytic apparatus of JP 229 were made rich, NO_x would be released from the catalytic device. However, that released NO_x would be immediately converted to N_2, and would not be available to oxidize the particulate material in the particulate filter, as required in JP 229.

Accordingly, JP 229 fails to disclose at least the claimed control means of independent claim 1. Accordingly, claim 1 is patentable over JP 229.

B. Independent Claim 2

Independent claim 2 is directed to a device for purifying the exhaust gas of an internal combustion engine comprising: a particulate filter arranged in the exhaust system, which carries a catalyst for absorbing and reducing NO_x, said catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which catalytic apparatus carries a catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; and bypassing means to make possible the exhaust gas bypass said particulate filter downstream said catalytic apparatus. Such a device is not disclosed in JP 229.

Independent claim 2 generally corresponds to previous dependent claim 2, placed into independent form. Claim 2 is amended to clarify that the catalyst contained in the particulate filter can be the same or different from the catalyst contained in the catalytic apparatus.

Accordingly, claim 2, and claims 3 and 4 dependent therefrom, are patentable over the cited reference.

C. Independent Claim 5

Independent claim 5 is directed to a device for purifying the exhaust gas of an internal combustion engine comprising: a particulate filter arranged in the exhaust system, which carries an oxidation catalyst; a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which catalytic apparatus carries a catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; and control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction. Such a device is not disclosed in JP 229.

As described with respect to claim 1, above, JP 229 discloses a catalyst 12 and a particulate filter 14 that "absorbs NO when an exhaust gas temperature is low and discharges NO_2 when exhaust gas temperature is increased." See Abstract, lines 10-12. However, JP 229 entirely fails to disclose that the device further includes a control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction. JP 229 also fails to disclose the feature of claim 5 that the particulate filter carries an oxidation catalyst, as claimed.

JP 229 does not disclose the claimed control means. According to the device of JP 229, NO_x is released from the catalytic apparatus arranged upstream of the particulate filter, to oxidize trapped particulates in the particulate filter. When the temperature of the catalytic apparatus changes, NO_x is released therefrom; however, the air-fuel ratio is not changed

when the temperature of the catalytic apparatus changes or when NO_x is released. JP 229 thus does not teach a control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction.

Even if the air-fuel ratio in JP 229 were changed, the result would still not be the claimed invention, and would render the device of JP 229 inoperable. In particular, if the air-fuel ratio in the catalytic apparatus of JP 229 were made rich, NO_x would be released from the catalytic device. However, that released NO_x would be immediately converted to N_2, and would not be available to oxidize the particulate material in the particulate filter, as required in JP 229.

JP 229 also does not disclose the claimed particulate filter. According to claim 5, the particulate filter carries an oxidation catalyst, not a NO_x absorbing and reducing catalyst. JP 229 does not teach or suggest such a catalyst contained on the particulate filter, and thus does not anticipate claim 5.

Accordingly, JP 229 fails to disclose at least the claimed control means and particulate filter of independent claim 5. Accordingly, claim 5, and dependent claim 6, is patentable over JP 229.

D. Conclusion

Accordingly, all of claims 1-6 define patentable subject matter over JP 229. Reconsideration and withdrawal of the rejection are respectfully requested.

For at least the reasons set forth above, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,

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JAO:JSA

Attachment:
Appendix

Date: **March 31, 2003**

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

APPENDIX

Changes to Claim:

Claims 7-8 are canceled.

The following is a marked-up version of the amended claim:

1. (Twice Amended) A device for purifying the exhaust gas of an internal combustion engine comprising:

a particulate filter arranged in the exhaust system, which carries a catalyst for absorbing and reducing NO_x, said catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x ~~to purify NO_x by reduction~~ when said air-fuel ratio is stochiometric or rich; ~~and~~

a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which catalytic apparatus carries ~~said~~ a catalyst ~~for absorbing and reducing NO_x~~ absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; and

control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction.

2. (Amended) A device for purifying the exhaust gas of an internal combustion engine ~~according to claim 1, further~~ comprising:

a particulate filter arranged in the exhaust system, which carries a catalyst for absorbing and reducing NO_x, said catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich;

a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which catalytic apparatus carries a catalyst absorbing NO_x

when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; and

bypassing means to make possible the exhaust gas bypass said particulate filter downstream said catalytic apparatus.

3. (Twice Amended) A device for purifying the exhaust gas of an internal combustion engine according to claim 2, ~~comprising:~~

~~a particulate filter arranged in the exhaust system, which carries a catalyst for absorbing and reducing NO_x, said catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x to purify NO_x by reduction when said air-fuel ratio is stochiometric or rich;~~

~~a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which carries said catalyst for absorbing and reducing NO_x; and~~

~~bypass means,~~ wherein ~~said catalytic apparatus carries said catalyst for absorbing and reducing NO_x,~~ during the recovery process of the SO_x pollution of said catalytic apparatus, said bypassing means makes the exhaust gas bypass said particulate filter.

4. (Twice Amended) A device for purifying the exhaust gas of an internal combustion engine according to claim 2, ~~comprising:~~

~~a particulate filter arranged in the exhaust system, which carries a catalyst for absorbing and reducing NO_x, said catalyst absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x to purify NO_x by reduction when said air-fuel ratio is stochiometric or rich;~~

~~a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which carries said catalyst for absorbing and reducing NO_x; and~~

~~bypass means,~~ wherein ~~said catalytic apparatus carries said catalyst for absorbing and reducing NO_x,~~ immediately after the finishing of the recovery process of the SO_x pollution of said catalytic apparatus, said bypassing means does not make the exhaust gas bypass said particulate filter and thus the exhaust gas passes through said particulate filter.

5. (~~Twice~~ Three Times Amended) A device for purifying the exhaust gas of an internal combustion engine comprising:

a particulate filter arranged in the exhaust system, which carries an oxidation catalyst ~~for absorbing NO_x when the air-fuel ratio is lean and releasing NO_x when the air-fuel ratio is stochiometric or rich; and~~

a catalytic apparatus for purifying NO_x arranged in the exhaust system upstream of said particulate filter, which catalytic apparatus carries ~~said~~ a catalyst ~~for~~ absorbing ~~and reducing~~ NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when said air-fuel ratio is stochiometric or rich; and

control means for making the air-fuel ratio in said catalytic apparatus rich to release NO_x therefrom and to purify the released NO_x by reduction.